

# इंटरनेट

# मानक

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भारतीय मानक

पोत निर्माण और समुद्रीय संरचनाएं — बचाव नौकाओं के विन्च  
( पहला पुनरीक्षण )

*Indian Standard*

SHIPBUILDING AND MARINE STRUCTURES —  
WINCHES FOR LIFEBOATS

( *First Revision* )

ICS 47.020.50

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**BUREAU OF INDIAN STANDARDS**  
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NEW DELHI 110002

## NATIONAL FOREWORD

This Indian Standard (First Revision) which is identical with ISO 6067 : 1985 'Shipbuilding and marine structures — Winches for lifeboats' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Marine Engineering and Safety Aids Sectional Committee and approval of the Transport Engineering Division Council.

The Indian Standard was first issued in 1979. This revision has been taken to harmonize it with latest version of ISO Standard.

The text of the International Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

## CROSS REFERENCES

In this adopted standard reference appears to certain International Standards listed below for which Indians Standards also exist. The corresponding Indian Standards, which are to be substituted in their places, are given below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO/R 338 Lifeboats for less than one hundred people (withdrawn)	IS 4602 : 1968 General requirements and testing of life boats for less than one hundred persons	Technically equivalent
ISO 2408 : 1985 Steel wire ropes for general purposes — Characteristics	IS 2266 : 2002 Steel wire ropes for general purposes — Specification	do
ISO 2944 : 1974 Fluid power systems and components — Nominal pressures	—	—
ISO 3828 : 1984 Shipbuilding — Deck machinery — Vocabulary	IS 8650 (Parts 1 to 5):1989 Shipbuilding — Deck machinery — Glossary of terms and graphical symbols	Technically equivalent
ISO 4413 : 1979 Hydraulic fluid power — General rules for the application of equipments to transmission and control systems	—	—

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*Indian Standard*  
**SHIPBUILDING AND MARINE STRUCTURES —  
WINCHES FOR LIFEBOATS**  
*( First Revision )*

## 1 Scope and field of application

This International Standard specifies the requirements for design, construction, safety, performance and acceptance testing of winches for lifeboats, used for manual, gravity or stored mechanical power launching, recovery and storage of lifeboats.

This International Standard does not include requirements for the prime mover (if any) used to operate the winch, which may have electric, hydraulic or pneumatic drive.

NOTE — Users of this International Standard shall also ensure compliance with requirements, rules and regulations of the national authority of the ship concerned, in order to obtain the classification "approved type".

## 2 References

ISO/R 338, *Lifeboats for less than one hundred people*.

ISO 2408, *Steel wire ropes for general purposes — Characteristics*.<sup>1)</sup>

ISO 2944, *Fluid power systems and components — Nominal pressures*.

ISO 3828, *Shipbuilding and marine structures — Deck machinery — Vocabulary*.

ISO 4413, *Hydraulic fluid power — General rules for the application of equipment to transmission and control systems*.

ISO 4414, *Pneumatic fluid power — Recommendations for the application of equipment to transmission and control systems*.

ISO 7824, *Shipbuilding — Lubrication nipples — Cone and flat types*.<sup>2)</sup>

ISO 7825, *Shipbuilding — Deck machinery — General requirements*.<sup>2)</sup>

IEC Publication 92, *Electrical installations in ships*.

IEC Publication 529, *Classification of degrees of protection provided by enclosures*.

## 3 Definitions

For the purpose of this International Standard, terms and definitions given in ISO 3828 apply.

Terms particularly applicable to this International Standard are defined below :

**3.1 lifeboat** : A craft complying with the requirements of Regulation 41 of SOLAS 1974 as amended.

**3.2 working load,  $Q$**  : The maximum force exerted by the fall or falls at the winch drums, when turning out, lowering, hoisting or stowing the lifeboat, under the conditions prescribed by IMO.

**3.3 test holding load, TL** : A static load equivalent to 1,5 times the working load  $Q$  which the winch brake shall be capable of holding.

**3.4 dynamic braking load** : That load on the winch drums produced by the lifeboat loaded with its full complement of persons and the inertial forces which occur when the craft is stopped from a lowering speed complying with national administration requirements.

**3.5 hoisting load,  $Q_1$**  : The force at the winch drums derived from the load required to lift the lifeboat with its full equipment and a number of persons as stated by the national administration.

**3.6 brake setting load,  $Q_2$**  : The force at the winch drum derived from the fully equipped lifeboat being lowered with its full complement of persons.

**3.7 nominal size** : The size corresponding to the working load  $Q$ , expressed in kilonewtons.

1) At present at the stage of draft. (Revision of ISO 2408-1973.)

2) At present at the stage of draft.

## 4 Design and construction

### 4.1 Mounting of winches

A sketch shall be prepared by the purchaser at the time of the enquiry to show the mounting position and the lowering direction (if necessary) of the winch and drum(s) relative to the lifeboat and launching system, generally as shown in the annex. Other forms of winch systems may be permitted.

### 4.2 Material stresses

The manufacturer of the winch shall be responsible for determining the strength requirements of the component parts of the winch, taking into account all loads (including the dynamic braking load) which in any case shall not be taken less than twice the working load  $Q$ . Furthermore, the stress level in any part of the winch shall not exceed the tensile strength divided by 4,5.

### 4.3 Drum design

**4.3.1** Lifeboat winches may be designed with a single split drum or two separate drums. In the case of two drums, these shall be arranged to enable the rope falls to run at the same rate.

**4.3.2** The drum length shall be such that the rope can be fully accommodated in not more than three layers. Provided that the complete length of rope is evenly reeled, the outermost layer shall not exceed  $2/3$  of the drum length. The fleet angle shall not be more than  $5^\circ$  for single layer grooved drums and not more than  $3^\circ$  for all other cases.

**4.3.3** The drum diameter shall normally be not less than 16 times the rope diameter.

**4.3.4** The flange height shall project at least 1,5 rope diameters beyond the outermost layer, when the rope is fully and evenly reeled on the drum.

### 4.4 Brake design

#### 4.4.1 Holding brake

The winch shall be fitted with a brake capable of applying a braking torque sufficient to maintain the test holding load,  $T_L$ , and shall be such that it could safely withstand the application of the maximum dynamic load which could occur when braking from the speed required by 5.4, taking into account the possibility that the winch may be lowering a load less than  $Q$ . All manual brake controls shall be so arranged that the brakes are always fully applied, unless the brake is under the control of a person either on deck or in the lifeboat.

#### 4.4.2 Governing brake

The winch shall also be fitted with a governing brake, capable of governing the lowering speed of the lifeboat to comply with 5.4.

### 4.5 Manual recovery

**4.5.1** All winches shall be provided with a facility for manual recovery of the lifeboat. The facility may comprise one or two crank handles or handwheels, each of which may be operated by two persons.

**4.5.2** The crank handles and handwheels shall not rotate when the lifeboat is lowered, or whilst hoisting under power.

**4.5.3** Continuous effort for manual operation shall not exceed 160 N per person at a radius of 400 mm. The effort for stowing may be higher.

**4.5.4** Provision shall be made to allow the falls to be manually unwound.

### 4.6 Design rope

This International Standard is based on the use of galvanized steel wire rope with fibre core with a stated tensile grade of 1 770 N/mm<sup>2</sup> as specified in table 10 of ISO 2408 [6 × 36 Warrington-Seale (FC)].

The rope size selected shall be such that its minimum breaking load is not less than six times the working load  $Q$ .

NOTE — The above requirements do not preclude the use in service of other suitable wire ropes, which comply with a recognized standard.

### 4.7 Controls

#### 4.7.1 Method of control of brake

The lifeboat holding brake shall be operated manually from a position on board the ship and by request also operated from within the lifeboat.

NOTE — When fire-resistant lifeboats are used, the control from within the lifeboat is required by most national administrations.

#### 4.7.2 Power sources

Powered winches shall be designed for operation by electric, hydraulic or pneumatic drive, designated E for electric, H for hydraulic, and P for pneumatic.

Unpowered winches shall be designated M, and may be driven by a portable power unit, if required. Where a portable unit is used, provision shall be made for the transfer of the torque to the winch frame.

#### 4.7.3 Marking of operating devices

All control handles, handwheels, push buttons or levers shall be clearly and permanently marked to indicate their purpose and mode of operation, unless the control is self-explanatory. Provision shall be made to indicate the direction of hoisting for manual recovery of the lifeboat.

#### 4.7.4 Automatic stop

All operating devices for lowering and power recovery shall return to the stop position automatically.

#### 4.8 Lubrication

The winch shall be designed for the mounting stipulated in 4.1. All bearing surfaces and parts which require lubrication shall be adequately lubricated at any angle up to 20° from the original mounting position.

Grease nipples shall conform to ISO 7824.

#### 4.9 Drive equipment

**4.9.1** Electrical drives and control equipment shall conform to the requirements of IEC Publication 92. Deck mounted enclosures shall conform to IEC Publication 529 IP 56 and portable equipment to IP 33.

**4.9.2** Hydraulic drives and control equipment shall conform to the requirements of ISO 4413. System nominal pressures shall be selected from ISO 2944, and the drive shall operate at a pressure 10 % below the selected nominal pressure and providing performance indicated in 5.2.

**4.9.3** Pneumatic drives and control equipment shall conform to the requirements of ISO 4414. System nominal pressures shall be selected from ISO 2944, and the drive shall operate at a pressure 10 % below the selected nominal pressure and providing performance indicated in 5.2.

### 5 Performance

**5.1** Winch performance shall conform to the table.

Table — Winch performance data

1	2	3	4	5
Nominal size	Working load $Q$ kN	Test holding load TL kN	Minimum breaking load per fall (twin fall arrangement) kN	Recommended rope diameter ISO 2048 (twin fall arrangement) mm
12,5	12,5	18,8	37,5	9
16	16,0	24,0	48,0	10
20	20,0	30,0	60,0	11
25	25,0	37,5	75,0	12
31,5	31,5	47,3	94,5	13
40	40,0	60,0	120,0	16
50	50,0	75,0	150,0	18
63	63,0	94,5	189,0	20
80	80,0	120,0	240,0	22
100	100,0	150,0	300,0	24
125	125,0	187,5	375,0	26
160	160,0	240,0	480,0	32

NOTE — The boat speed may be obtained by single or multi-part tackle. The winch shall be designed accordingly.

**5.2** Powered winches for lifeboats shall be capable of hoisting a  $Q_1$  load at an average lifeboat speed of not less than 0,05 m/s with the number of persons as stated in 3.5.

**5.3** Unpowered winches shall be capable of hoisting a  $Q_1$  load at a minimum lifeboat speed of not less than 0,005 m/s up to embarkation level.

**5.4** All winches shall be capable of lowering a  $Q_2$  load under gravity at the lifeboat speed required by the national administration.

### 6 Designation

**6.1** Winches for lifeboats conforming to this International Standard shall be designated as follows :

- lifeboat winch;
- number of this International Standard;
- type of drive :  
E = electric,  
H = hydraulic,  
P = pneumatic,  
M = unpowered winch;
- nominal size (according to the table);
- orientation and mounting (see the annex);
- split drum, as appropriate ("X" when the lifeboat winch is provided with a split drum).

Example :

Designation of a winch for a lifeboat according to ISO 6067, hydraulically powered (H), of nominal size 50, drum position inclined, fixation frame, left-side arrangement, without split drum :

**Lifeboat winch ISO 6067-H-50, drum position inclined, fixation frame and left-side arrangement**

**6.2** A label shall be placed on the winch with only the number of this International Standard, the type of drive and the nominal size.

Example :

**ISO 6067-H-50**

### 7 Acceptance tests

The following tests shall be performed.



### 7.1 No load test

Test winch for 10 min without rope. Check starting, stopping and setting of any limit switches.

### 7.2 Hoisting test

Hoist a load  $Q_1$  to a total height of 15 m, in one or several steps according to the manufacturer's specified possibilities. In case of several steps, they shall be made without interruption. Equivalent loads and speeds may be accepted.

During the test the following shall be reported :

- a) oil tightness of joints;
- b) power input;
- c) hoisting speed at drums;
- d) correct operation of the brake and ratchet;
- e) interlocking between hand drive and power drive.

### 7.3 Lowering test

Lower a load  $Q_2$  from a total height of 15 m, in one or several steps according to the manufacturer's specified possibilities. In case of several steps, they shall be made without interruption. Check the lowering speed. Check the interlocking between the hand drive and gravity lowering. When lowering, check the working of the governing brake at least twice.

### 7.4 Holding brake test

Check the holding brake with the test holding load, T.L. The drum shall not rotate when loaded to  $1,5 Q$ . It shall also be

demonstrated that the load can be held, after the drum has been released, for one complete turn at low speed.

### 7.5 On board test

Some tests specified in clause 7 may be carried out on board, subject to agreement between the manufacturer and the purchaser.

In any case, the proving and functional tests of launching appliances as a whole shall be carried out on board.

## 8 Information to be provided by the purchaser to the manufacturer

The purchaser shall supply the following information to the manufacturer :

- a) winch to ISO 6067;
- b) type of drive, power supply;
- c) sketch (in accordance with 4.1), orientation, lowering (if necessary) and mounting (see the annex);
- d) total travel of the lifeboat;
- e) wire rope diameter and type of rope;
- f) lifeboat type and technical data;
- g) number of parts in the tackle;
- h) load  $Q_1$  and boat hoisting speed at this load;
- j) load  $Q_2$  and boat lowering speed at this load.

# Annex

## Mounting of winches

(This annex forms an integral part of the Standard.)

The required lowering direction (A or B) shall be stated only when arrows are shown in the sketch.	Drum shaft	Gearbox arrangement and drum position	Deck	Fixation	Ceiling	Drum arrangement and orientation								
						Side								
						Left	Right							
Nearest pulley and lowering direction Brake control	Double	Vertical												
		Inclined												
		Horizontal												
Brake shaft Drum shaft	Single	Vertical down				Split	Left	Right	Separate	Left	Right	Symmetrical	Left	Right
		Inclined down												
		Horizontal												
Inclined up														
Vertical up														
			Lateral view			Plan view								

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<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 7824 Shipbuilding — Lubrication nipples — Cone and flat types	ISO 7824 Shipbuilding — Lubrication nipples — Cone and flat types	Equivalent
ISO 7825 : 1985 Shipbuilding — Deck machinery — General requirements	—	—
IEC Publication 92 (1965 to 1988) Electrical installations in ships	—	—
IEC 529 (1976) Classification of degrees of protection provided by enclosures	IS 12063 : 1987 Classification of degrees of protection provided by enclosures of electrical equipment	Equivalent

The Technical Committee responsible for the preparation of this standard has reviewed the provisions of ISO 2944, ISO 4413, ISO 4414, ISO 7824 and IEC 92 publication, and decided that they are acceptable for use in conjunction with this standard.

For BIS Certification Marking, details are available with the Bureau of Indian Standards.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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## Amendments Issued Since Publication

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